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ABSTRACT

Influences of socioeconomic status, cognitive skills, and response tempo upon personal-social behaviors in disadvantaged preschool children were investigated as part of the Educational Testing Service-Head Start Longitudinal Study. Measures of cognitive skill, cooperation, response latency, and socioeconomic status were taken. Results indicated that cognitive level prior to preschool entry consistently influenced the child's personal-social behavior, while socioeconomic status did not. Children who were more cognitively skilled were found to be more outgoing. Children with a fast response tempo exhibited difficulty in adapting to preschool environments, and were less peer oriented. (SBT)

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DISADVANTAGED CHILDREN

AND THEIR FIRST SCHOOL EXPERIENCES

ETS-Head Start Longitudinal Study

Preschool Personal-Social Behaviors: Relationships with Socioeconomic Status, Cognitive Skills, and Tempo

Walter Emmerich

August 1973

EDUCATIONAL TESTING SERVICE
PRINCETON, NEW JERSEY

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TABLE OF CONTENTS

Acknowledgments....i

Introduction....1

Method....6

Sample....6

Independent Variables....7

Dependent Variables....11

Influences of Socioeconomic Status and Cognitive Skill....18

Socioeconomic Status....18

Cognitive Skill: Preschool Inventory....20

Cognitive Skill: Peabody Picture Vocabulary Test....22

Child Cooperation....27

Discussion....29

Influences of Response Tempo and Style....32

Results: Response Tempo....34

Results: Response Style....37

Discussion....43

Summary and Conclusions....47

References....53

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Data for the present study were collected in the early years of the ETS-Head Start Longitudinal Study. Individual contributions to this extensive data-collection effort are acknowledged in earlier reports, but the writer again wishes to express his special appreciation to these persons for making the present study possible.

Introduction

One index of the quality of the young child's educational experience is the nature of his personal-social behavior within the classroom. The child who spends his time attempting to master tasks seems likely to acquire and consolidate task-related skills, and the child who engages in certain social interchanges seems likely to master interpersonal skills. Of particular interest and concern is the child for whom an educational experience does not "take hold" in either of these respects. The present study examines how certain individual differences among children measured prior to entry into preschool influence the child's responses to the classroom environment. A previous report in this series (Emmerich, 1971) established that the child's sex and age at time of measurement were related to classroom personal-social behaviors. The present study considers the influences of socioeconomic status, cognitive skill, and response tempo upon personal-social behaviors.

Why is it important to understand such relationships between a child's characteristics prior to preschool and his classroom behaviors? From a scientific standpoint, a major purpose is to better understand processes underlying personal-social behaviors in young children. Based upon the assumption that cognitive skills generally facilitate adaptive behavior, it was expected that the child's level of cognitive skill would relate to his personal-social behaviors within the classroom. But it was uncertain to what extent this would be the case and precisely how such a relationship would be manifested in personal-social behavior. Moreover, there was interest in whether the child's response tempo on cognitive tasks involving

response uncertainty would be related to his classroom responses. Since low relationships had been found in this sample at this age between measures of response tempo and cognitive skill levels (Shipman, 1971; 1972a; 1972b; Ward, 1973), different patterns of relationships might be expected between these two classes of measures and personal-social behaviors. Previous work also had established that the child's response tempo was related to teachers' judgments on the effectiveness of certain methods of teaching (Emmerich, 1973b). These findings indicated that response tempo at this young age provides another kind of underpinning for individual differences in children's personal-social classroom behaviors. Finally, there was interest in whether an index of family socioeconomic status (maternal education) would be associated with the child's classroom responses, and whether cognitive influences would hold irrespective of the child's socioeconomic background.

Such information also has potential implications for policy. First, child behavioral tendencies and background characteristics which influence responses to school environments need to be documented so that policies might be broadened to deal with these influences at an earlier age period within the family context and/or within other educational environments. Secondly, knowledge of relevant child characteristics provides a basis for setting more realistic goals for a particular educational experience. When individual differences among students prior to school entry influence the child's responses to a given school environment, then we must expect students to vary in their degree of accomplishment within that environment. Third, an experiential or behavioral characteristic of the child known to be relevant

to his response to school might be detected prior to school entry and lead to procedures for more appropriately individualizing the child's psycho-educational experiences. Finally, such knowledge can be integrated with information about the direct impact of classroom environments upon children's responses to these environments. Future reports in this series will deal with the impact of classroom environments (e.g., teacher behaviors) upon children's personal-social behaviors, and with possible interactions between child characteristics and certain environmental factors in the classroom. The present study extends the knowledge base upon which such future research might build.

Conceptualization and measurement have proved to be especially difficult in the personal-social area, particularly for young children. The present study utilized multiple ratings made by trained observers after they observed the child's behavior during "free play" within the classroom. While this system of measurement could not be implemented here with the same degree of precision associated with laboratory studies, it did yield measures of sufficient quality for examining the types of functional relationships considered in this study (Emmerich, 1971).

From a conceptual standpoint, the basic underlying assumption is that multiple measures of personal-social behaviors define an ordered structure or configuration. This structure has now been found in a number of populations, at different ages, and with applications of different measurement procedures (e.g., Becker & Krug, 1964; Emmerich, 1971; Kohn & Rosman, 1972a; Schaefer, 1971). Broadly speaking, the structure consists of the three dimensions of Extraversion Vs. Introversion, Iove Vs. Hostitily, and Task-

Orientation (Schaefer, 1971). A more refined understanding is gained when these three dimensions are seen as defining a space within which a variety of personal-social constructs can be located. For example, the first two of these dimensions considered together define a circumplex (approximately circular order) which can be said to "contain" a variety of personal-social constructs. The following constructs were known from previous analyses to define a circumplex: Sociable, Loving, Cooperative-Interpersonal, Cooperative-Impersonal, Compliant, Submissive, Withdrawn, Distrusting, Defiant-Hostile, and Assertive (Emmerich, 1971). In addition, certain other behavioral constructs were identified as Task-Oriented, including Autonomous Achievement, Cognitive Activity, and Fine Manipulative Activity. Attention also was given to behaviors directed toward adult vs. peer targets, and these two measures were found to have different locations within the overall configuration (Emmerich, 1971).

A total of 18 personal-social constructs will be considered in the present study as potential correlates of individual differences in socioeconomic status, cognitive skill, and response tempo. The fact that interrelationships among personal-social constructs are known in advance provides a systematic framework for interpreting functional relationships. For example, we can answer the question of whether child cognitive skill has a different influence upon the circumplex-ordered constructs than upon Task-Orientation. Moreover, we can discover whether children having fast, moderate, and slow response tempos in response to test tasks tend to be located at different places within the overall personal-social configuration. In short, consideration of multiple construct measures in conjunction with

their underlying configuration provides a basis for sharpening our understanding of relationships between personal-social behaviors and other processes.

In addition to providing static multivariate descriptions of individual differences in personal-social behaviors at a given point in time, the three-dimensional configuration also suggests a basis for interpreting behavioral changes in general, and developmental change (or psycho-educational growth) in particular. In the present study personal-social behavioral assessments were taken twice during the preschool year, first in the fall and again in the spring. The general assumption guiding analyses of changes between these periods is that they occur along gradients defined by the underlying ordering of personal-social constructs (Emmerich, 1971; Foa, 1968). With regard to the circumplex ordering, for example, an individual (or subgroup) identified initially as Compliant seems more likely to become Cooperative than Assertive (in the short run), since Compliant and Cooperative are in closer proximity within the structure than are Compliant and Assertive. Of course, this hypothesis does not state that change will occur, but only that proximal changes are more likely than distal changes if change does occur. The present data are of sufficient quality to explore the gradient hypothesis, although they may lack the degree of precision required for highly rigorous tests.

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Previous evidence also suggested that personal-social change is more likely to occur in certain directions than in others (Emmerich, 1971). Not unexpectedly, there was a tendency for children to become better adapted to the preschool environment with greater experience in that environment. For

example, children generally became more socially outgoing and affectionate during the fall period (Emmerich, 1971). Of course, this generalization probably holds only under certain conditions, and one purpose of the present study was to determine whether individual differences among preschool children prior to preschool tend to modify the direction of personal-social change over time within the classroom. Another important qualification is that any observed change within the preschool environment may or may not generalize to other environments (Emmerich, 1973a). The conditions fostering such generalization remain largely unknown. Nevertheless, even if personal-social changes were to be rather specific to the preschool environment at this age, such changes could still have importance in facilitating mastery of certain skills within the classroom.

Method

Sample

Sampling was influenced by the Longitudinal Study's goal of monitoring the classroom experiences and behaviors of a target group of children having a reasonable probability of enrolling in Head Start during 1969-70. Major criteria for selecting study sites were that they should be poverty areas and in different regions of the continental United Starts. Selection criteria for subjects were that they should be living in areas served by year-long Head Start programs feeding into primary schools cooperating in the larger study, and should be eligible for first grade, on the basis of birthdate, in the fall of 1971. Detailed descriptions of the total initial sample and of data collection procedures are found in Project Report 71-19 (Shipman, 1971), and 69-12 (ETS, 1969), respectively.

Classroom personal-social measures were collected in Portland, Oregon, St. Louis, Missouri, and Trenton, New Jersey, during the 1969-70 academic year. An attempt was made to rate all children included in the larger longitudinal study who were enrolled in a preschool or day-care center during 1969-70. In addition, ratings were made on the other children in a classroom if 60% or more of the children in that classroom (80% in St. Louis) were included in the larger longitudinal study. The sample on whom personal-social ratings were obtained included children eligible for first grade in the fall of 1971 on the basis of age plus those children within one month of such eligibility. A total of 596 children were rated at least once on all personal-social classroom measures in both the fall and spring. Fifty-three percent of this sample were boys, 78% were Black, and their average age at the (approximate) time of preschool entry was 52 months (S.D. = 3.7). (More complete data on this sample is found in Emmerich, 1971). Since family background and child test data prior to preschool entry were not secured on many of these children, subsamples used in the present study were reduced in size (Tables 5-8).

Independent Variables

Maternal education was determined by the highest grade attained, as reported in the 1969 parent interview. For the larger longitudinal sample, the average number of grades completed was about eleven (Shipman, 1972a). While for the larger sample it was possible to trichotomize this variable, in the present reduced sample only a dichotomy proved feasible. Here, children from "high" SES backgrounds had mothers who completed 12 or more years of school ($N = 158$), whereas children from "low" SES backgrounds had mothers who completed 11 or fewer years of school ($N = 158$).

As part of the larger Longitudinal Study, a variety of cognitive tasks were administered to children individually by trained examiners during 1969 (Shipman, 1971). Factor analysis revealed that a number of these tasks loaded on a general information-processing factor. Three measures loading on this factor were selected as independent variables in the present study: (1) Preschool Inventory (total score), (2) Peabody Picture Vocabulary Task, Form A (total score), and (3) Child Cooperation Rating on the Hess and Shipman Eight-Block Sorting Task. Reliability estimates for these measures based upon the larger sample were .92, .96, and .81, respectively. (This estimate was based upon the correlation between interaction tasks in the case of the Cooperation Rating.) Detailed information on the procedures of data collection and scoring, measure properties, factor structures, and measure correlates are found in Shipman, 1971, 1972a, 1972b.

It was desirable to correct the child's score on each of these tasks for age at time of testing. On conceptual grounds, it was important that estimates of child cognitive skill be unconfounded with the child's age at the time of entry into preschool. Moreover, performance on the above cognitive tasks was known to improve with age, even over a period of a few months (Shipman, 1972b). Since child assessments in Year 1 occurred throughout the spring and summer of 1969, raw measures were somewhat influenced by when the child happened to be tested during this interval. Consequently, each child's score on each of the above tasks was corrected to a common age-at-measurement, based in most instances upon the child's age at the time the Preschool

Inventory was administered. This procedure partialled out the child's predicted score on each task on the basis of the child's age at time of testing. All findings reported using these tasks are based upon these regressed scores.

Several measures of response latency defined a second factor in the Year 1 test battery (Shipman, 1971). These included (1) log average time to respond on the Sigel Object Catergorization Task, (2) mean log (x + 1) of response times on the Matching Familiar Figures Task, and (3) log average time for first response on the Preschool Embedded Figures Task. (Detailed information on these measures is found in Shipman, 1971, 1972a, 1972b; Ward, 1973). However, a series of analyses by Ward (1973) indicated that these three measures were not uniform in meaning for the larger longitudinal sample throughout three consecutive years. While these three measures in Year 1 did exhibit some uniformity of influence upon teachers' judgments about effective techniques of teaching in Year 2, (Emmerich, 1971), it seemed appropriate to choose a single latency measure in Year 1 that might best signify response tempo at this age in this population. The Sigel Task, which asks the child to group 12 common objects using a classification rule of his own choosing, appeared to be best suited for this purpose due to its apparent discriminant validity as an index of response tempo at this age (Ward, 1973) and because this measure was most consistently related to teacher judgments (Emmerich, 1973b). Since the Sigel latency measure was unrelated to child age at the time of measurement, age-corrected scores for this measure were not derived. The reliability estimate for this measure was .77.

Table 1 presents intercorrelations among the above task measures for those subjects also having classroom personal-social measures in both the fall and spring of 1969-70. These correlations are quite consistent with those found for the larger sample (Shipman, 1971) and for that subsample on which teacher judgments were available (Emmerich, 1973b).

Table 1

Intercorrelations Among Task Measures

Measure		1	2	3
Preschool Inventory, age-corrected	1			
PPVT, age-corrected	2	.53		
Cooperation Rating, age-corrected	3	-.33	-.20	
Sigel Latency	4	.07	.21	.01

Note.--Cell N's varied from 220 to 325, with a median of 270.

Each of the above independent variables was evaluated in a series of ANOVAS in which each of the 18 personal-social measures served as the dependent variables. For the four task-derived measures, three levels were determined so that non-linear effects might be detected. Classification criteria given in Table 2 were based upon empirical distributions for the present subsamples, and these cutting points turned out to be comparable to those used in the analyses of teachers' judgments (Emmerich, 1973b). When cell disproportionalities could not be avoided for trichotomous classifications, an attempt was made to reduce disproportionality between "high" and "low" subgroupings.

Table 2

Independent Variable Classifications: Task Measures

Measure	Classification Criteria*	
	High	Low
Preschool Inventory, age-corrected	$\geq$ 4.500	$\leq$-4.501
PPVT, age-corrected	$\geq$ 5.500	$\leq$-5.501
Cooperation Rating, age-corrected	$\geq$ .050	$\leq$-1.051
Sigel Latency	$\geq$ .950	$\leq$ .749

*Subjects falling between the high and low cutting points were classified as medium.

Dependent Variables

The 18 construct measures constituting the dependent variables of the present study were derived from a large and representative sampling of the personal-social behaviors of young children in the preschool setting (Emmerich, 1971). Following a taxonomic analysis of the personal-social domain, an instrument was developed consisting of 21 seven-point Bipolar Scales, 127 four-point Unipolar Scales, and a Manual of Unipolar Scale Definitions and Examples (see appendixes in Emmerich, 1971). The Bipolar Scales assess broad personality characteristics while the Unipolar Scales assess more specific categories of behavior, including social motives, coping responses, and activities. A number of component behaviors were included within these categories, and in order to discern possible

differentiations between child-adult and child-child subsystems of behavior, identical behavioral content (e.g., "Friendly") were sometimes included in two scales, one defined with an adult as the target of the subject's behavior, and the other with a child as the social object.

The procedure for rating a child typically was as follows: A pair of raters simultaneously observed the subject child continuously for 30 minutes during a "free play" period when adults in the classroom minimally structured the child's activities. Immediately after this observation period the two observers left the classroom, went to a relatively secluded location, and independently rated the child on the complete set of Unipolar and Bipolar Scales. These rating protocols were preserved and used to estimate interrater reliabilities. After completing their independent ratings, the two raters discussed those scales on which their ratings disagreed, with the aim of arriving at a complete set of consensus ratings. The consensus ratings defined a "single observation" on the child, constituting the basic unit of measurement.

Raters were recruited from the study communities themselves, and typically were housewives with high school educations. They participated in intensive two-week training sessions prior to actual data collection, and their work was closely monitored by study staff. Interrater reliabilities were assessed throughout the period of data collection, and averaged .63 on the Bipolar Scales and .74 on the Unipolar Scales.

Full descriptions of procedures and outcomes of the structural analyses and construct derivations are found in Emmerich, 1971.

Briefly, eight subgroups were formed, based upon the child's sex, a dichotomous breakdown for child age at the time of measurement in the fall, and fall vs. spring periods of measurement. Structural analyses yielded the three-dimensional configuration discussed earlier, which was reasonably invariant across these eight subgroups. Eighteen personal-social constructs were derived to mark different locations within this configuration, including the 10 circumplex-ordered constructs and measures on the Task-Orientation dimension. Table 5 from the earlier report (Emmerich, 1971), which defined the 18 personal-social constructs in terms of the Bipolar and Unipolar Scales, is reproduced below as Table 3.

Unipolar Scale ratings were estimates of behavioral frequencies during the 30 minute observation period, whereas Bipolar Scale ratings assessed broader personal-social attributes during that period. Since Unipolar Scale judgments on a child were made prior to Bipolar Scale ratings for that child, correlations between these two types of scales indicated which behavioral cues (Unipolar Scales) were used in arriving at judgments along the Bipolar Scales. This question concerning the observation base was of particular importance for the circumplex-ordered personal-social constructs, since these measures were derived solely from the Bipolar Scales (Table 3). In order to specify these ten constructs in more direct behavioral terms, Table 4 presents their (average) correlations with the most frequently used cues, taken from the set of Unipolar Scales.

Table 3

Construct Measures Defining the Three-Space Structure

Construct Title[a]	Component Scale(s)[b]	Median Interrater[c] Reliability
1. Sociable	Social Vs. Solitary (BP 12)	.67
2. Loving	Happy Vs. Unhappy (BP 21)	.65
3. Cooperative-Interpersonal	Purposeful Vs. Aimless (BP 16)	.58
4. Cooperative-Impersonal	Constructive Vs. Destructive (BP 15)	.58
5. Calm-Compliant	Compliant Vs. Rebellious (BP 4)	.54
6. Submissive	Submissive Vs. Dominant (BP 8)	.65
7. Withdrawn	Withdrawn Vs. Involved (BP 1)	.70
	Restrained Vs. Expressive (BP 5)	.63
8. Distrusting	Tense Vs. Relaxed (BP 6)	.59
	Unstable Vs. Stable (BP 11)	.57
9. Defiant-Hostile	Vulnerable to Frustration Vs. Tolerates Frustration (BP 3)	.63
	Self-Centered Vs. Sensitive to Others (BP 7)	.58
	Aggressive Toward Others Vs. Affectionate Toward Others (BP 18)	.58
10. Assertive	Assertive, Bold Vs. Timid, Fearful (BP 13)	.63

Table 3 (cont'd)

Construct Title[a]	Component Scale(s)[b]	Median Interrater[c] Reliability
11. Adult Orientation	Seeks Physical Affection (UP 1)	.93
	Seeks Help or Guidance (UP 3)	.73
	Seeks Physical Proximity (UP 5)	.83
	Seeks Attention - Positive Bid (UP 7)	.85
	Seeks Attention - Weak Bid (UP 11)	.77
	Seeks Praise or Approval (UP 13)	.85
	Seeks Evaluation (UP 15)	.94
	Conforms to Routine-Request (UP 27)	.68
	Friendly (UP 42)	.70
	Seeks Leadership (UP 48)	.45
	Seeks Information (UP 77)	.71
	Responsive to Teaching (UP 79)	.81
	Imitates (UP 81)	.68
	Attempts to Communicate Verbally (UP 84)	.84
12. Child Orientation	Seeks Physical Affection (UP 2)	1.00
	Seeks Help or Guidance (UP 4)	.87
	Seeks Physical Proximity (UP 6)	.72
	Seeks Attention - Positive Bid (UP 8)	.75
	Seeks Attention - Weak Bid (UP 12)	.72
	Seeks Praise or Approval (Up 14)	.84
	Seeks Evaluation (UP 16)	.70
	Conforms to Routine-Request (UP 28)	.66
	Friendly (UP 43)	.78
	Seeks Leadership (UP 49)	.94
	Seeks Information (UP 78)	.72
	Responsive to Teaching (UP 80)	.70
	Imitates (UP 82)	.71
	Attempts to Communicate Verbally (UP 85)	.85

Table 3 (Cont'd)

Construct Title[a]	Component Scale(s)[b]	Median Interrater[c] Reliability
13. Autonomous Achievement	Takes Initiative in Carrying Out Own Activity (UP 57)	.53
	Tries to Pursue Difficult Task (UP 58)	.74
	Exhibits Persistence (UP 60)	.61
	Completes Activity by Himself (UP 61)	.77
	Exhibits Goal-Directed Activity (UP 95)	.72
	Shows Planning in Pursuing Activity (UP 96)	.64
	Corrects or Modifies Performance to Meet Own Standard (UP 98)	.62
14. Cognitive Activity	Cognitive Activity (UP 53)	.83
15. Fine Manipulative Activity	Fine Manipulative Activity (UP 52)	.76
16. Artistic Activity	Artistic Activity (UP 55)	.87
17. Gross Motor Activity	Gross Motor Activity (UP 51)	.85
18. Fantasy Activity	Fantasy Activity (UP 54)	.85

[a]The first ten constructs correspond to the circumplex ordering of Becker & Krug (1964).

[b]Scale titles and numbers correspond to those of the Scale Form (Appendix A)and Manual (Appendix B) in Emmerich, 1971.

[c]From Appendix E, Three-Site Total, Combined Fall & Spring, in Emmerich, 1971.

Table 4

Behavioral Correlates of Circumplex Personal-Social Constructs

Unipolar-Scale		Construct									
		Sociable	Loving	Coop. Int.	Coop. Imp.	Compliant	Submissive	Withdrawn	Distrusting	Defiant-Hostile	Assertive
No.[a]	Meaning[b]	1	2	3	4	5	6	7	8	9	10
85	Communicates verbally-child	.49	.37	.22	.05	-.04	-.25	-.47	-.27	-.03	.37
43	Friendly-child	.55	.42	.21	.04	.07	-.15	-.47	-.26	-.17	.28
31	Complementary	.37	.28	.22	-.03	.03	-.10	-.35	-.16	-.06	.22
50	Smiles, laughs	.41	.47	.17	.01	.04	-.11	-.43	-.23	-.06	.26
62	Intrinsic satisfaction	.30	.40	.33	.16	-.01	-.18	-.45	-.31	-.09	.27
42	Friendly-adult	.22	.30	.15	.10	.05	-.11	-.30	-.08	-.09	.26
95	Goal-directed	-.02	.11	.32	.30	.05	-.05	-.13	-.05	-.18	.16
96	Plans activity	.01	.16	.28	.30	.08	-.02	-.16	-.10	-.18	.14
61	Completes activity by self	-.07	.08	.18	.31	.00	.06	-.05	-.05	-.06	.06
102	Preoccupied with thoughts	-.25	-.24	-.27	-.04	.09	.14	.36	.24	-.07	-.26
106	Hesitant in relating-adult	-.26	-.32	-.22	-.06	.04	.19	.36	.25	-.05	-.32
107	Hesitant in relating-child	-.27	-.22	-.30	-.04	.03	.23	.34	.24	-.06	-.31
108	Hesitant to try things	-.26	-.23	-.34	-.10	.05	.22	.34	.34	-.04	-.34
22	Helpless	-.20	-.26	-.39	-.11	.11	.19	.33	.35	-.01	-.30
113	Easily frustrated-child	-.07	-.19	-.06	-.17	-.27	-.19	.05	.28	.39	.03
127	Resp. to frust.-anger	.08	-.03	.04	-.09	-.25	-.22	-.13	.16	.30	.20
119	Resp. to frust.-rebell.	.08	.01	.04	-.09	-.35	-.18	-.05	.17	.29	.15
124	Resp. to frust.-retaliates	.11	.03	.03	-.19	-.24	-.28	-.14	.19	.27	.25
72	Physical aggression-child	.19	.12	.01	-.26	-.31	-.34	-.18	.02	.41	.35
29	Rejects adult request	.11	.09	-.04	-.23	-.34	-.27	-.08	.12	.29	.28
68	Verbal aggression-child	.18	.08	.05	-.14	-.18	-.29	-.19	.08	.23	.31
70	Bosses child	.26	.22	.17	-.05	-.25	-.38	-.32	-.08	.18	.40
88	Verbally loud	.37	.30	.18	-.14	-.20	-.43	-.42	-.12	.16	.40

Note.--Entries are median correlations for eight Sex x Age x Period subgroups.

[a]Unipolar Scale numbers correspond to those found in Appendixes A and B in Emmerich, 1971.

[b]These meanings are defined more specifically in Appendix B of Emmerich, 1971.

Influences of Socioeconomic Status and Cognitive Skill

Socioeconomic Status

Influences of socioeconomic status were determined from Maternal Education (2) x Preschool Inventory (3) x Period (2) Analyses of Variance applied to each of the 18 personal-social constructs. In no instance did the Maternal Education Main Effect reach statistical significance, indicating that this index of socioeconomic status generally was unrelated to classroom personal-social behaviors in the study population. In general, the lack of relationship between maternal education and personal-social behaviors occurred when the latter were measured both in the fall and spring of the preschool year. The one notable exception was in the area of Autonomous Achievement. As seen in Figure 1, children whose mothers were less educated increased in Autonomous Achievement from fall to spring, whereas children whose mothers were more educated decreased in this behavior during this period (Maternal Education x Period Interaction, $p < .001$).

Two possible interpretations of this finding can be offered at this time, although further evidence is needed to choose between them or to reconcile them. One possibility is that considered as a whole, the preschool environments of the children sampled in this study provided differential opportunities and/or support for Autonomous Achievement in the two socioeconomic groups. For children with a lesser degree of socioeconomic advantage, these preschool environments may have been more optimal than home environments in fostering such behaviors, leading to an increase during the school year. For children with a greater

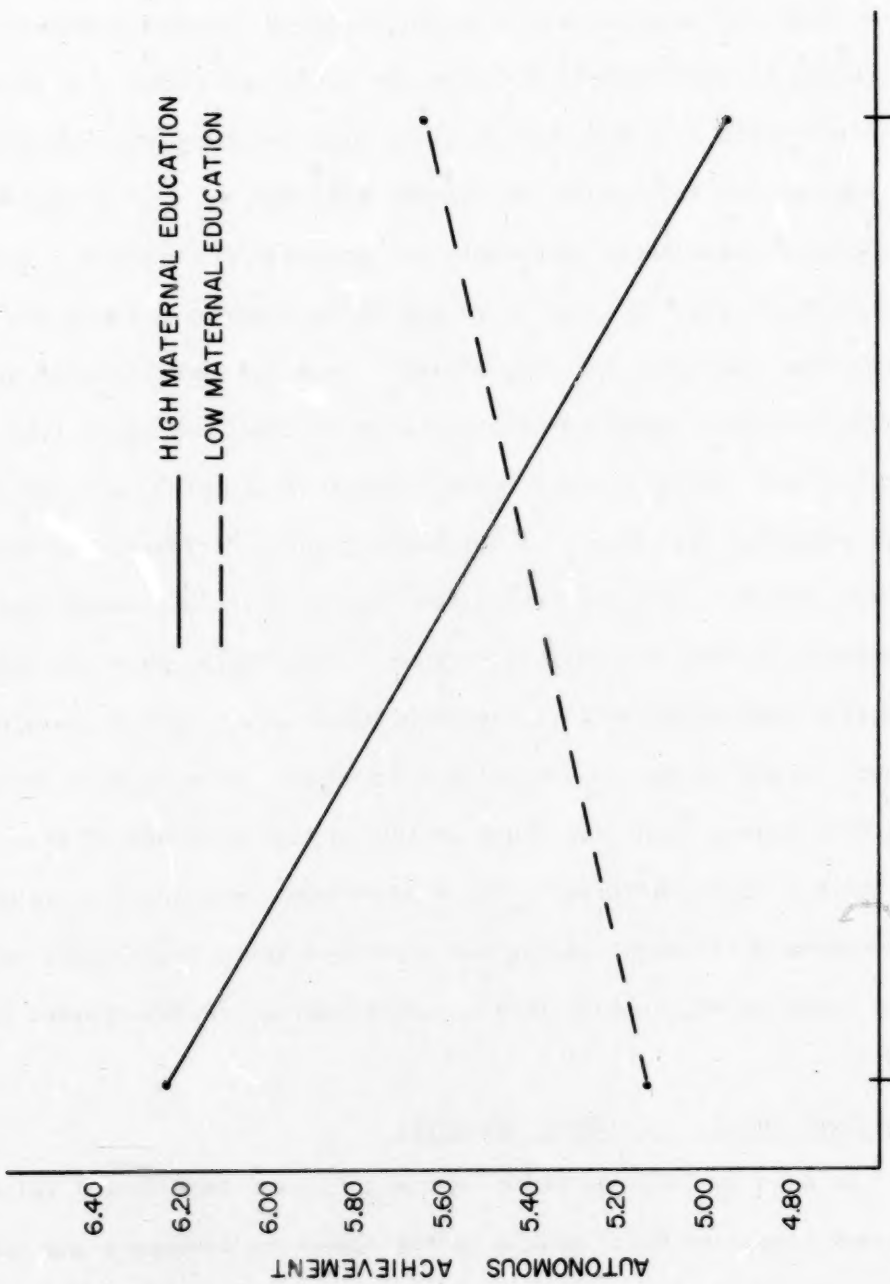


Fig.1 Development of Autonomous Achievement in Relation to Maternal Education.

degree of socioeconomic advantage, however, these same preschool environments may have provided about the same or even less support for Autonomous Achievement than home environments, leading eventually to decreases in such behaviors during the preschool year. The alternative interpretation is based less directly upon environmental opportunity or support for Autonomous Achievement behavior per se. In this view, Autonomous Achievement represents an important developmental milestone for children this age, but increases in this behavior would not necessarily be expected after some minimal level had been attained by the child. Children whose mothers are more educated may reach this level earlier than children whose mothers are less educated, but the difference would be one of rate of attainment, not a difference in developmental course. This interpretation implies that Autonomous Achievement generally follows a curvilinear growth trend during this age period, and that individual differences along this curve would be related to other indexes of psycho-educational maturity. Some support for the latter interpretation was found in the earlier analyses of this series in which younger children in these classrooms were found to increase in Autonomous Achievement during the preschool year, while older children were found to decrease in this behavior during the same period (Emmerich, 1971).

Cognitive Skill: Preschool Inventory

As seen in Table 5, there were significant (monotonic) relationships between cognitive skill levels on the Preschool Inventory and the circumplex-ordered constructs, especially along the Extraversion-Introversion

Table 5

Mean Scores on Personal-Social Constructs for Three Levels of Performance on the Preschool Inventory

Personal-Social Constructs		Preschool Inventory Level						F-Values
		High (N=99)		Medium (N=113)		Low (N=104)		
No.	Title	Mean	Rank	Mean	Rank	Mean	Rank	
1	Sociable	4.88	(1)	4.76	(2)	4.51	(3)	4.75**
2	Loving	5.13	(1)	5.05	(2)	4.90	(3)	3.22*
3	Cooperative (Int.)	4.93		4.88		4.75		2.02
4	Cooperative (Imp.)	4.79		4.71		4.73		.77
5	Compliant	4.41		4.50		4.45		.76
6	Submissive	3.59	(2.5)	3.58	(2.5)	3.90	(1)	5.31**
7	Withdrawn	5.46	(3)	5.67	(2)	6.13	(1)	7.23***
8	Distrusting	6.53	(3)	6.79	(2)	7.05	(1)	5.94**
9	Defiant-Hostile	11.48		11.59		11.55		.10
10	Assertive	4.64	(1.5)	4.60	(1.5)	4.33	(3)	4.42*
11	Adult Orientation	6.93		7.93		7.08		2.92
13	Autonomous Achievement	5.35		5.75		5.33		1.04
14	Cognitive Activity	.71		.58		.50		2.01
15	Fine Manipulative Activity	1.26		1.24		1.24		.01
16	Artistic Activity	.74		.78		.74		.22
12	Child Orientation	6.84		6.83		6.26		1.01
17	Gross Motor Activity	.97		1.03		.98		.21
18	Fantasy Activity	1.13		1.13		1.14		.06

$^{*}p < .05$

$^{**}p < .01$

$^{***}p < .001$

$df_1 = 2$; $df_2 = 312$

dimension. Apparently, extent of the child's social involvement in the classroom during free play was mediated by the child's information-processing skills. However, no significant Main Effects were found for the Preschool Inventory in relation to the remaining personal-social constructs. Level of cognitive skill on this instrument interacted with Maternal Education and Period to influence several personal-social constructs, but these interactions were few and unsystematic, indicating that the above outcomes are reasonably general across socioeconomic levels within the present population.

Cognitive Skill: Peabody Picture Vocabulary Test: (PPVT)

Influences of verbal skill level were determined from Maternal Education (2) x PPVT (3) x Period (2) Analyses of Variance applied to each of the 18 personal-social constructs. As seen in Table 6, relationships between verbal skill and the circumplex-ordered personal-social constructs were similar to those found for the Preschool Inventory. Once again, Maternal Education interacted with the cognitive index and with Period to influence several personal-social constructs, but these outcomes did not alter the basic findings reported in Table 6.

However, in contrast to the Preschool Inventory, there was evidence from the PPVT that verbal skill is related to task-oriented behaviors in the classroom. As seen in Table 6, children classified as Low in verbal skill on the PPVT exhibited relatively little Autonomous Achievement and Cognitive Activity. Moreover, there was a PPVT x Period Interaction for Autonomous Achievement ($p < .05$) resembling that for Maternal Education discussed earlier. As seen in Figure 2, the direction of change in this

Table 6

Mean Scores on Personal-Social Constructs for Three Levels of Performance on the PPVT

No.	Personal-Social Constructs Title	PPVT Level High (N=101) Mean	Rank	Medium (N=92) Mean	Rank	Low (N=101) Mean	Rank	F-Values
1	Sociable	4.81		4.70		4.62		1.17
2	Loving	5.17	(1)	4.97	(2.5)	4.92	(2.5)	4.05*
3	Cooperative (Int.)	4.88		4.95		4.72		2.88
4	Cooperative (Imp.)	4.72		4.81		4.74		.50
5	Compliant	4.43		4.43		4.48		.42
6	Submissive	3.53	(3)	3.64	(2)	3.95	(1)	7.63***
7	Withdrawn	5.51	(3)	5.79	(2)	6.10	(1)	5.41**
8	Distrusting	6.76		6.75		6.85		.24
9	Defiant-Hostile	11.51		11.49		11.50		.07
10	Assertive	4.74	(1)	4.51	(2)	4.29	(3)	8.56***
11	Adult Orientation	7.67		7.28		6.83		1.91
13	Autonomous Achievement	5.85	(1.5)	5.80	(1.5)	4.77	(3)	6.13**
14	Cognitive Activity	.69	(1.5)	.71	(1.5)	.40	(3)	6.80**
15	Fine Manipulative Activity	1.27		1.32		1.14		1.66
16	Artistic Activity	.78		.84		.65		2.22
12	Child Orientation	7.05		6.64		6.20		1.64
17	Gross Motor Activity	1.03		.92		.99		.60
18	Fantasy Activity	1.27		1.05		1.03		2.99

*$p < .05$

**$p < .01$

***$p < .001$

$df_1 = 2, df_2 = 290$

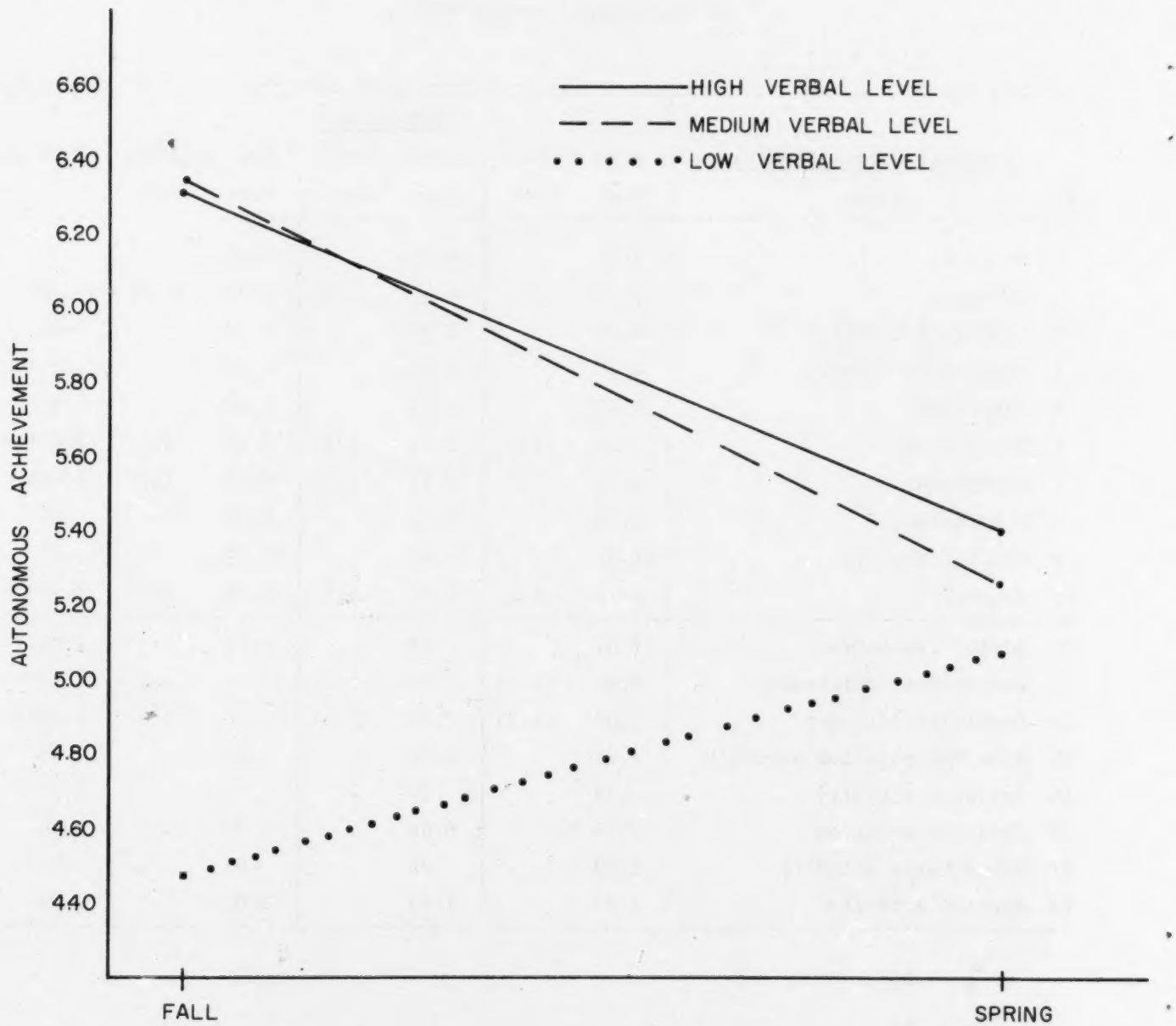
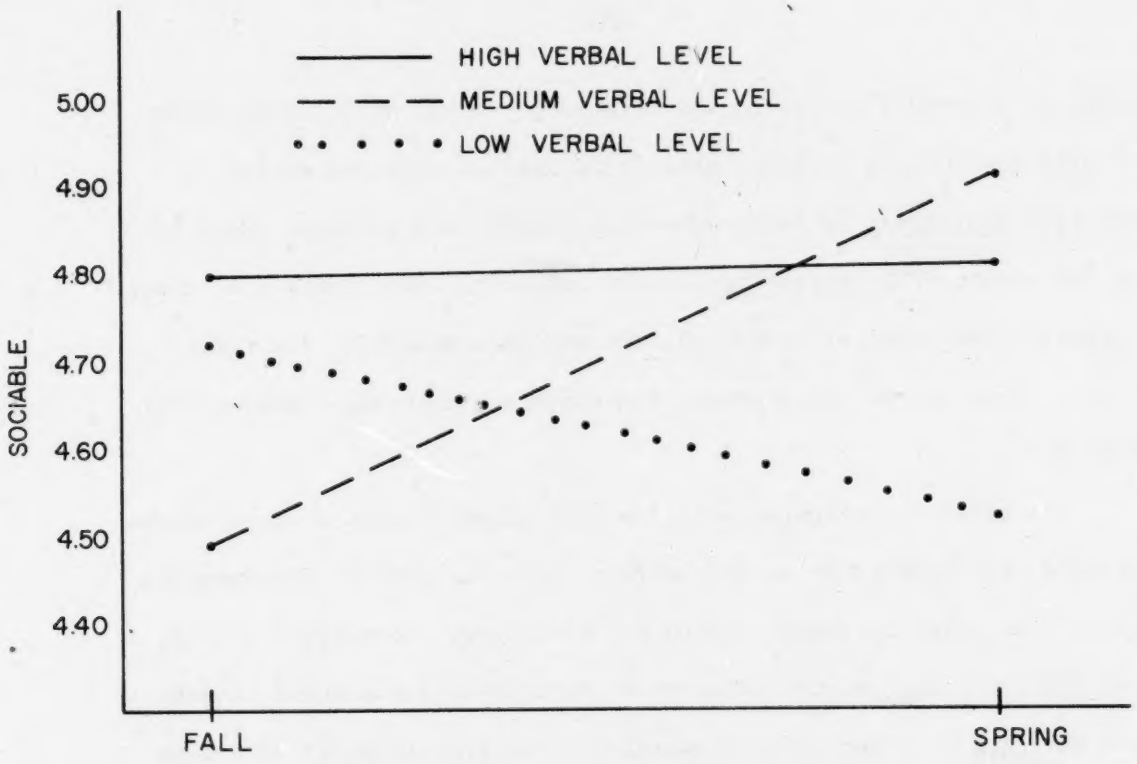


Fig.2 Development of Autonomous Achievement in Relation to PPVT Levels.

behavior from fall to spring was related to verbal skill level prior to preschool entry, with children classified as High and Medium on the PPVT decreasing in Autonomous Achievement, and children classified as Low on the PPVT increasing in this behavior. This pattern of change suggests that level of verbal ability may be a mediator of a curvilinear trend in the development of Autonomous Achievement during this period.

The present configurational approach suggests that when subgroups diverge developmentally on a construct there may also be accompanying changes at other locations within the structure. More specifically, one might ask whether the decrease in Autonomous Achievement in High and Medium PPVT groups was accompanied by substitutions of behaviors located on the circumplex. There was some evidence that children of moderate verbal level on the PPVT became more socially outgoing during the school year, especially in relationships with peers. This pattern of change can be seen in Figure 3, which depicts PPVT Level x Period Interactions for the personal-social constructs titled Sociable and Child Orientation (ps $< .01$). However, the fact that children at the highest level on the PPVT did not also increase on these two measures of social involvement reveals that increased sociability did not function as a substitute for Autonomous Achievement in this particular subgroup. Perhaps this was because the high PPVT subgroup was consistently high in positive social affect (Loving and Assertive) throughout the preschool year (Table 6).

It is unclear why individual differences on the PPVT but not on the Preschool Inventory were significantly associated with Task Orientation.



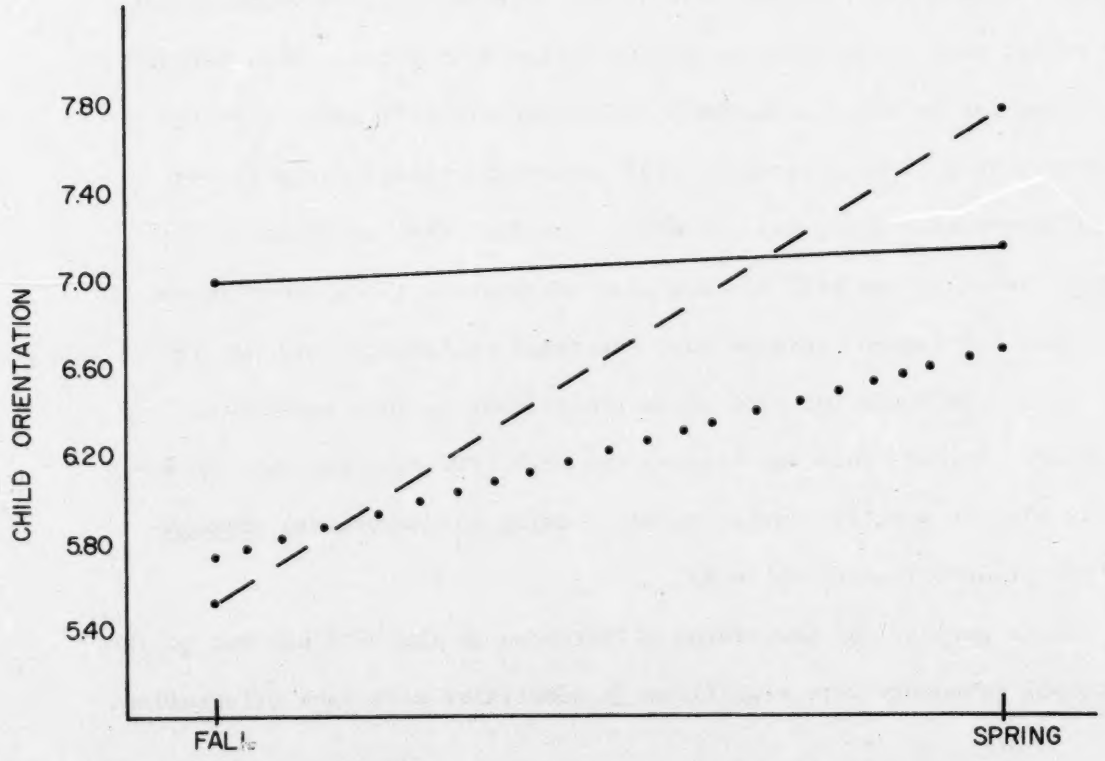


Fig. 3 Development of Social Involvement in Relation to PPVT Levels.

Because of this discrepancy, the findings for Task Orientation are considered more tentative than those for the circumplex-ordered constructs.

Child Cooperation

For both the Preschool Inventory and the PPVT, cognitive skill level prior to preschool entry related to the child's social involvement in the classroom, indicating that information-processing skills function as mediators of the child's social adaptation to preschool environments at this age. However, the question arises whether these test measures reflect primarily a cognitive or a motivational component in test-taking. Data on this question are provided by the Child Cooperation Rating from the Eight-Block Mother-Child Interaction Task. While this measure was known to load on a general information-processing factor at this age (Shipman, 1971), this loading was not as high as those for the Preschool Inventory and the PPVT, suggesting that it might have weaker relationships with variables known to be mediated by cognitive skill. Table 7 reports Child Cooperation Main Effects from the 18 Maternal Education (2) x Child Cooperation Rating (3) x Period (2) Analyses of Variance. It is clear from these findings that child cooperation with the mother on this task generally was unrelated to the child's classroom personal-social behaviors. The contrast between the influence of this measure and the two more direct measures of cognitive skill is especially striking with regard to the circumplex-ordered constructs. It would appear that the observed relationships between child test performances and personal-social classroom behaviors were mediated by information-processing skills rather than by a general disposition to cooperate with another in performing a task.

Table 7

Mean Scores on Personal-Social Constructs for Three Levels of Child Cooperation (Mother-Child Interaction)

No.	Personal-Social Constructs Title	Child Cooperation[a] High (N=101)	Medium (N=101)	Low (N=98)	F-Values
1	Sociable	4.64	4.69	4.73	.24
2	Loving	4.90	5.07	5.04	1.74
3	Cooperative (Int.)	4.76	4.89	4.87	1.10
4	Cooperative (Imp.)	4.70	4.69	4.87	2.80
5	Compliant	4.42	4.46	4.52	.53
6	Submissive	3.78	3.62	3.71	.99
7	Withdrawn	5.89	5.70	5.80	.44
8	Distrusting	6.96	6.76	6.74	1.00
9	Defiant-Hostile	11.58	11.53	11.42	.30
10	Assertive	4.46	4.56	4.52	.41
11	Adult Orientation	7.43	7.15	7.27	.18
13	Autonomous Achievement	5.43	5.43	5.67	.26
14	Cognitive Activity	.52	.60	.69	1.68
15	Fine Manipulative Activity	1.28	1.23	1.25	.15
16	Artistic Activity	.74	.71	.84	1.10
12	Child Orientation	6.39	6.68	6.84	.52
17	Gross Motor Activity	.97	1.00	1.01	.08
18	Fantasy Activity	1.09	1.27	.97	4.29*

[a] A "High" Classification signifies a low level of child cooperation.

* $p < .05$; $df_1 = 2$, $df_2 = 296$

While it might seem paradoxical that a measure of cooperation (with the mother) is a poor predictor of similar behaviors in the classroom, it will be recalled from the earler discussion that the present approach does not claim that personal-social behaviors will necessarily generalize across differentiated contexts. Indeed, the present negative evidence for such generalization together with positive evidence for cognitive mediation suggests that test measures of cognitive performance at this age are better predictors of personal-social behavior than are measures of personal-social behavior taken in a different context. Apparently, information-processing skills which mediate social adaptation are more likely to generalize to new contexts at this age than are the personal-social behaviors themselves.

Discussion

Cognitive level prior to preschool entry consistently influenced the child's personal-social behaviors, while socioeconomic background (maternal education) did not. Previous findings had established that maternal education was quite strongly associated with child cognitive skill prior to preschool entry in the larger longitudinal sample (Shipman, 1971, 1972a, 1972b). This pattern of findings suggests that socioeconomic status influences cognitive growth, which, in turn, influences adaptation to social contexts outside the family. This postulated chain implies that personal-social behaviors are more directly influenced by the child's current repertoire of information-processing skills than by the direct socialization of personal-social behaviors per se. The fact that cooperation with the mother in the interaction task did not relate to children's

classroom personal-social behaviors is consistent with this interpretation. Moreover, while teachers' beliefs about the effectiveness of teaching methods were found to covary with pupil socioeconomic background, such relationships were considerably weaker than (and perhaps confounded by) relationships between these teacher judgments and child cognitive skill prior to preschool entry (Emmerich, 1973b).

Of course, this interpretation in terms of cognitive mediation is post hoc and based upon limited and largely indirect evidence. It also differs from most explanations of personal-social socialization (Goslin, 1969). Consequently, this interpretation should be taken as a working hypothesis for future research. For example, analyses of such family background factors as family structure and maternal discipline might shed further light on this matter. On the basis of present evidence, it is difficult to rule out the possibility that certain socialization practices within the family determine anxiety in interpersonal contexts, leading both to depressed performances on cognitive tests and to less socially outgoing personal-social behaviors in other contexts (Kohn & Rosman, 1973; Richards & McCandless, 1972). Moreover, the present hypothesis does not necessarily imply that personal-social characteristics <u>generally</u> fail to generalize from one context to another. Little is known about the specific conditions under which such generalizations are likely to occur (Emmerich, 1973a). Since this population was both young and socioeconomically disadvantaged, present evidence for lack of such generalization does suggest that more advanced cognitive processes, of a nature as yet unknown, may be required to facilitate transfer of personal-social characteristics from one context to another.

It is also likely that within a given setting, such as the classroom, cognitive skills and personal-social behaviors mutually influence each other rather than having a unidirectional relationship. The brighter child apparently adapts more readily to the classroom environment, but the child who is socially outgoing or task-oriented also is in a particularly good position to develop interpersonal or task-related skills, respectively. Thus, while the present findings bear primarily on influences of cognitive skills upon personal-social behaviors, the present interpretation is not intended to deny a reversal in the direction of influence. Indeed, future studies are planned which will examine associations between classroom personal-social behaviors during the preschool year and subsequent cognitive performances.

In regard to this question of reciprocal relationships between cognition and personal-social behavior, it is noteworthy that the present findings were similar to those of Kohn & Rosman (1972b, 1973), who treated classroom personal-social characteristics as independent variables in relationships with a variety of concurrent and subsequent cognitive outcomes. As in the present study, these investigators found that an Interest-Participation vs. Apathy-Withdrawal factor, corresponding to our first circumplex dimension, was most strongly and consistently associated with independently measured cognitive skills, and that a Cooperation-Compliant vs. Anger-Defiance factor, corresponding to our second circumplex dimension, was least associated with cognitive measures. Kohn & Rosman (1973) also found that Task Orientation was associated with cognitive skill, as occurred in the present study for the Peabody Picture Vocabulary Test, although not for the Preschool Inventory. These

correspondences between the present findings and those of Kohn & Rosman tend to support the idea that cognitive and personal-social development mutually influence one another in young children.

Influences of Response Tempo and Style

Cognitive skill level and latency of response to certain cognitive tasks were known to be uncorrelated in the present population at this age (Shipman, 1971, 1972a, 1972b; Ward, 1973). Compared to older or more socioeconomically advantaged children, these children were less likely to modulate their rates of responding in the service of more effective information-processing (Ward, 1973). For this reason, response latencies on certain tasks could be conceptualized at this age as indexes of response tempo (Kagan, 1971; Kagan & Kogan, 1970; Ward, 1973), and were expected to have different relationships than cognitive skill levels with personal-social behaviors. Moreover, previous findings on teacher's reports about these children suggested the presence of curvilinear relationships between response tempo and children's responses to classroom environments (Emmerich, 1973b). Specifically, children with (relatively) moderate rates of responding to test demands prior to preschool entry were judged by teachers as more receptive to a variety of teaching techniques than children of either relatively fast or slow response tempos. It seemed likely that children who responded especially rapidly to task demands would fail to process new information with sufficient adequacy to adapt optimally to the teacher's expectations. It was also speculated that the slowest responders were influenced by a motivational factor which interfered with the teacher's sense of effectiveness in teaching these children and that this factor might be fear-of-failure or

evaluation anxiety (Kagan & Kogan, 1970; Messer, 1970). These findings on teacher judgments suggested that the three response tempo subgroups would differ in their classroom personal-social behaviors.

In the study of teachers' beliefs about children's ease of learning, cognitive skill levels also influenced teacher judgments, but this variable did not interact with response tempo to influence such judgments, revealing once again independence between these two variables at this age in the present population (Emmerich 1973b). Such independence implies that relatively few of these children varied their response rates in the service of classroom information-processing requirements (Ward, 1973). But it was also possible that some children had in fact achieved this integration (a reflective response style), and that it would be manifested in the classroom personal-social measures. Consequently, interactions between response tempo and cognitive skill level were examined to discover their possible joint influences upon classroom personal-social behaviors.

For reasons discussed earlier, log average time to respond on the Sigel Object Categorization Task was used in the present study as the index of response tempo. Significant interactions between this measure and the Preschool Inventory, our most general measure of cognitive skill, were considered in terms of response style. The results are presented in two sections, the first dealing with Sigel latency effects that were quite general across levels of cognitive skill on the Preschool Inventory (response tempo), and the second dealing with effects that were jointly influenced by these two measures (response style).

Results: Response Tempo

Table 8 reports latency Main Effects from the Preschool Inventory (3) x Sigel Latency (3) x Period (2) Analyses of Variance applied to each of the 18 personal-social measures. It is clear that individual differences in response tempo measured in a test situation prior to preschool entry were related to children's classroom personal-social behaviors, especially along the Love-Hostility and Task-Orientation dimensions.

As expected, these influences were patterned differently within the three response latency subgroups. Relatively fast responders were most Defiant-Hostile, least Loving and Child-Oriented, and exhibited the least amount of Cognitive Activity and Fantasy Activity ("make believe"). It is important to recall that the behavioral indicators of Defiant-Hostile included frustration-induced responses (Table 4), suggesting relatively low levels of frustration tolerance in these children at this age in this context. It would thus appear that fast responders had considerable difficulty adapting to these preschool environments, both in their emotional relationships with others and in their involvement with task-related activities. (An important exception to this generally negative picture will be noted later.)

Children who responded with moderate speed to the Sigel Task exhibited a different pattern of personal-social behaviors. These children were the most interpersonally Cooperative and also were relatively high on the constructs of Loving, Cognitive Activity, and Fantasy Activity. While not statistically significant, this subgroup also was highest on Adult Orientation.

Table 8

Mean Scores on Personal-Social Constructs for Three Levels of Response Tempo (Sigel Latency)

No.	Personal-Social Construct Title	Response Tempo: Slow (N=74) Mean	Slow (N=74) Rank	Medium (N=96) Mean	Medium (N=96) Rank	Fast (N=66) Mean	Fast (N=66) Rank	F-Values
1	Sociable	4.76		4.90		4.57		2.02
2	Loving	5.11	(1.5)	5.16	(1.5)	4.84	(3)	5.58**
3	Cooperative (Int.)	4.67	(3)	5.07	(1)	4.91	(2)	7.21***
4	Cooperative (Imp.)	4.77		4.80		4.75		.10
5	Compliant	4.55		4.46		4.31		2.84
6	Submissive	3.83		3.50		3.82		3.91
7	Withdrawn	5.78	(a)	5.43	(a)	6.02	(a)	3.37*
8	Distrusting	6.81		6.54		6.80		.99
9	Defiant-Hostile	11.12	(3)	11.59	(2)	11.82	(1)	5.32**
10	Assertive	4.43	(a)	4.69	(a)	4.36	(a)	4.18*
11	Adult Orientation	7.26		7.57		6.73		1.79
13	Autonomous Achievement	5.53		5.83		5.20		1.44
14	Cognitive Activity	.68	(1.5)	.70	(1.5)	.33	(3)	8.07***
15	Fine Manipulative Activity	1.26		1.25		1.22		.06
16	Artistic Activity	.75		.79		.68		.53
12	Child Orientation	7.48	(1)	6.79	(2)	5.59	(3)	8.75***
17	Gross Motor Activity	1.01		1.05		.94		.49
18	Fantasy Activity	1.17	(1.5)	1.15	(1.5)	.84	(3)	4.62*

[a]Ranks are omitted here because they were altered by higher order interactions discussed in the text.

*$p < .05$

**$p < .01$

***$p < .001$

$df_1 = 2, df_2 = 231$

It would appear that in contrast to the fast responders, this subgroup generally was relatively well adapted to these preschool environments both with regard to interpersonal relationships and task-related activities.

The pattern for the slowest responders generally was similar to that for children of moderate tempos with regard to expressions of positive affect and involvement with cognitive and fantasy activities. However, the slowest responders were less (interpersonally) Cooperative while also exhibiting a relatively strong orientation toward peers. While the latter combination of attributes may seem unusual, it is quite possible that these children interacted relatively frequently with peers, and that these relationships generally were accompanied by positive affect, but without the kind of purposefulness that was associated with the Cooperative constructs (Table 4). Also, there is some suggestion that these children were not as cooperative toward adults (Adult Orientation) as were children of moderate tempo. In any event, slow responders appear to have adapted quite well to these preschool environments and to have been especially peer-oriented.

The above findings are sharpened or qualified by certain variations between fall and spring personal-social measures. The latency subgroups ranks reported in Table 8 for Hostile-Defiant occurred during both periods, but these subgroup differences were greater in the spring than in the fall (Sigel Latency x Period Interaction, $p < .05$). In this important respect, then, children differing in response tempo became increasingly divergent in the course of development during

this period. There was also evidence that moderate responders became increasingly Compliant from fall to spring relative to fast and slow responders (Sigel Latency x Period Interaction, $p < .05$). Of special interest, however, was the observed interaction between response tempo and period of measurement for Autonomous Achievement ($p < .01$). As seen in Figure 4, slow and moderate responders decreased in this behavior during the preschool year, while the fastest responders increased in this behavior during the preschool year. At least in this one important respect fast responders were utilizing these preschool environments to good advantage, a finding that serves to attenuate the otherwise negative picture for this subgroup.

Results: Response Style

There was evidence that certain circumplex-ordered personal-social behaviors were subject to interacting influences among the variables of response latency, cognitive skill level, and period of measurement. These complex effects were of special interest because they indicated that the present response tempo classification could be viewed as a moderating variable that influences the impact of cognitive skill upon the development of personal-social behaviors, a conceptualization which provided a link between response tempo and cognitive style (Reflectivity-Impulsivity). As seen in Figures 5, 6, and 7, these triple interactions generally occurred in a meaningful reciprocal pattern for the constructs of Withdrawn ($p < .05$) and Assertive ($p < .01$), located at about opposite positions along the Extraversion-Introversion dimension.

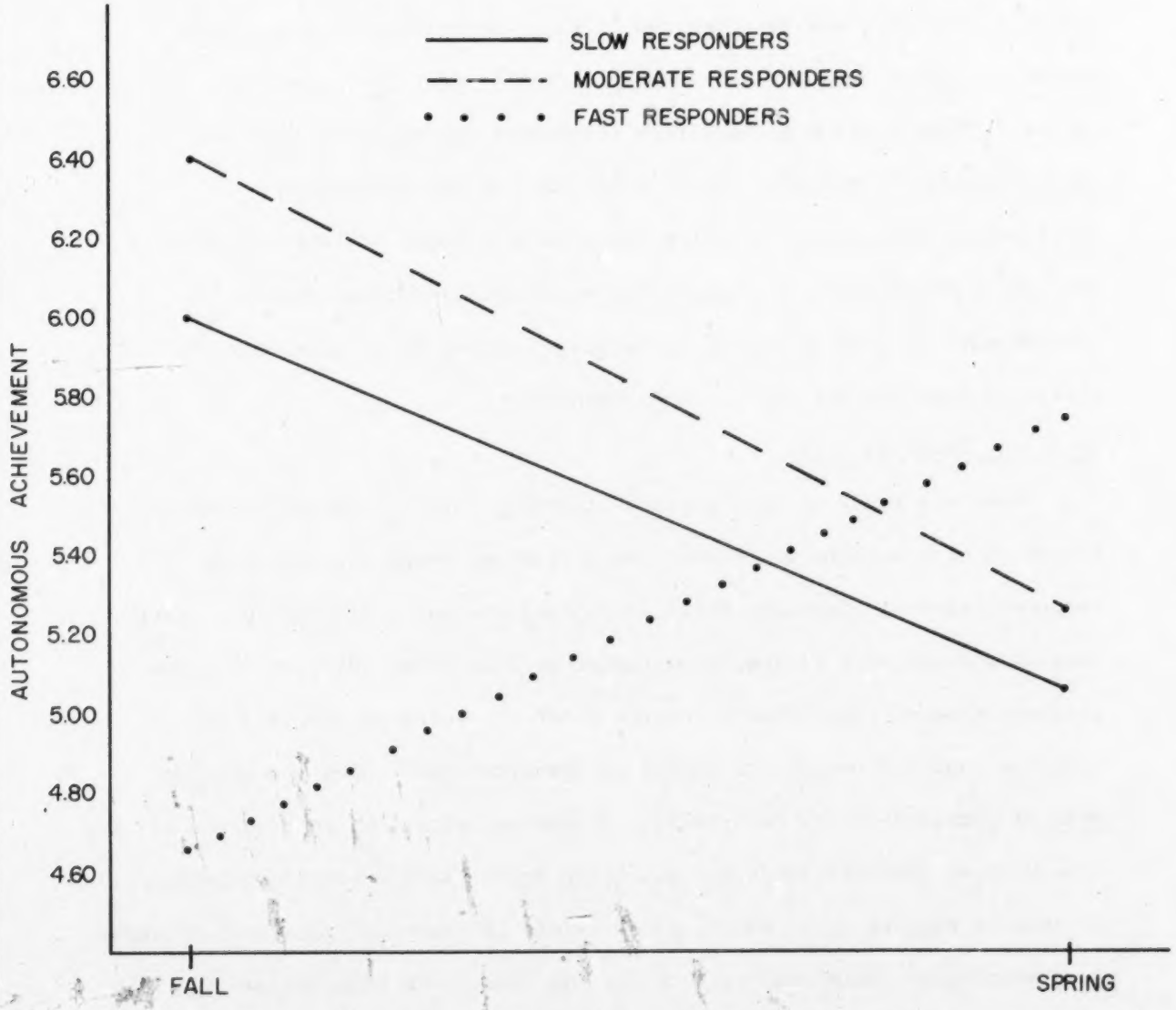
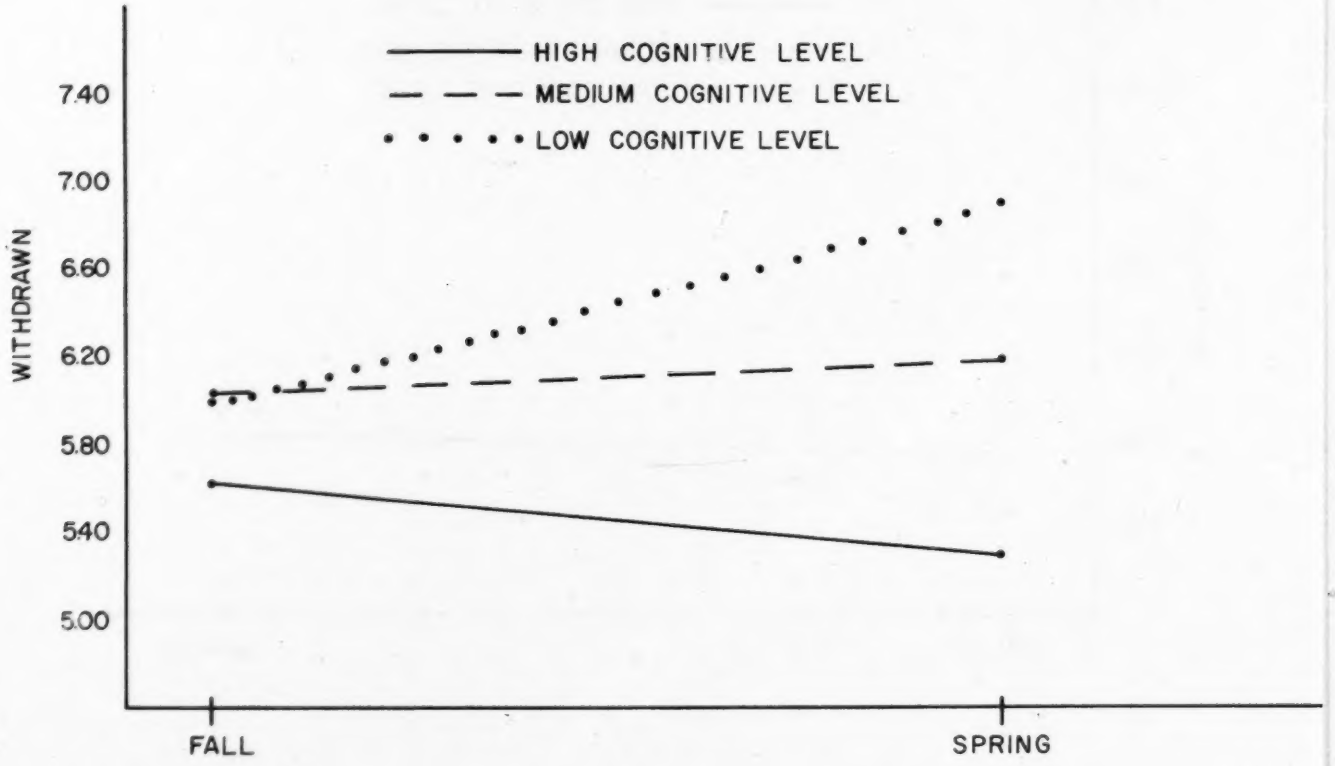


Fig. 4 Development of Autonomous Achievement in Relation to Response Tempo.



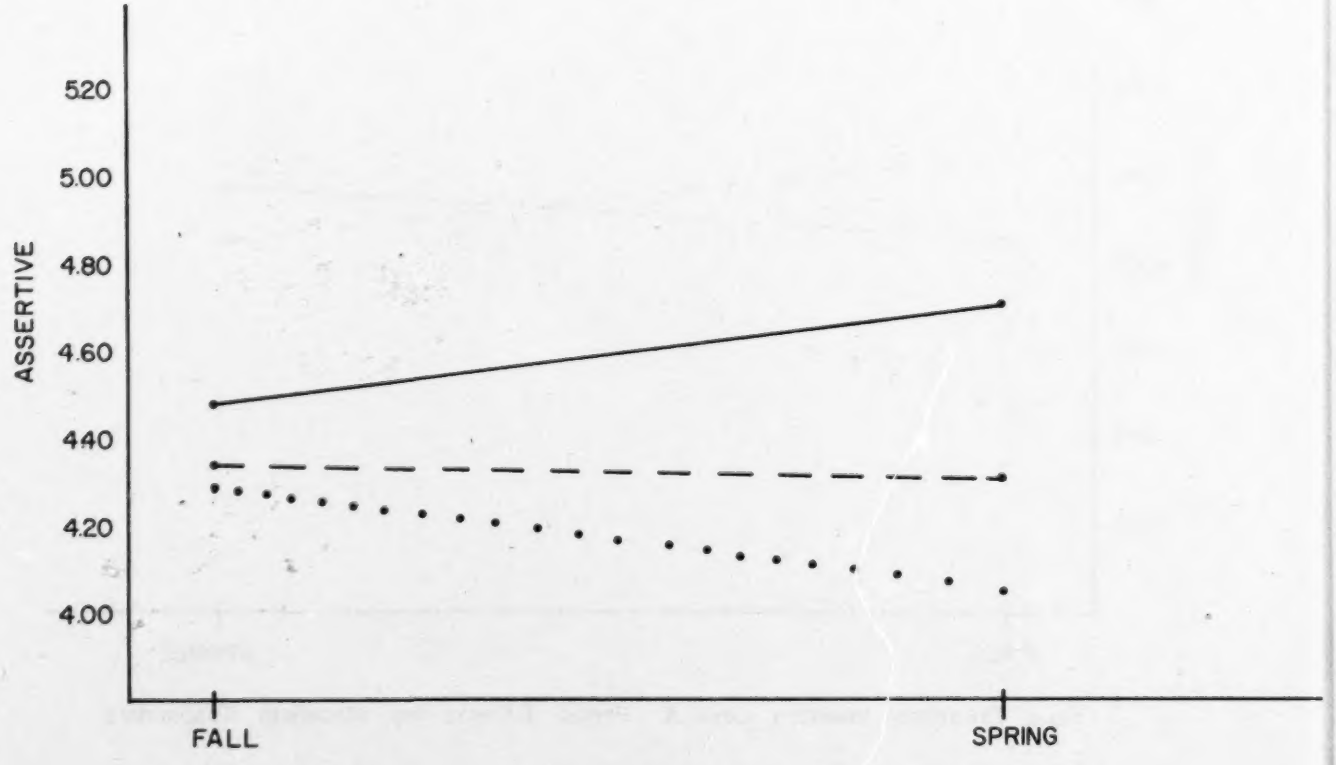
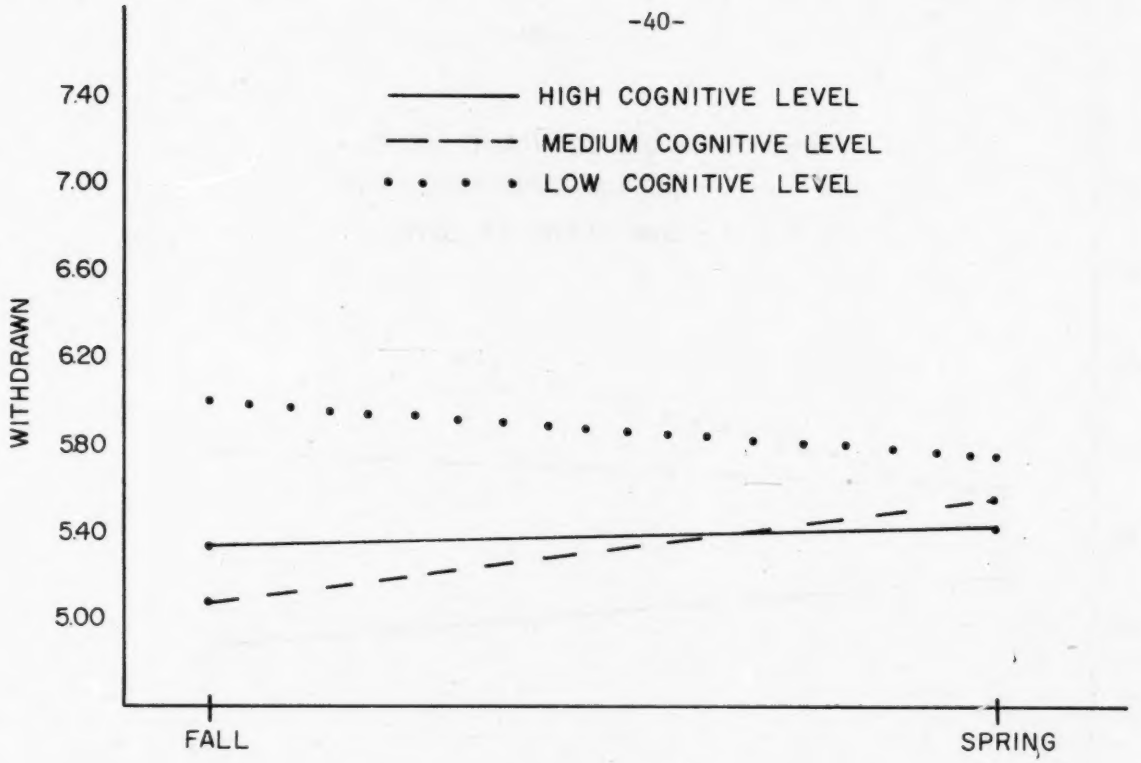


Fig.5 Preschool Inventory Level X Period Effects for Fast Responders.



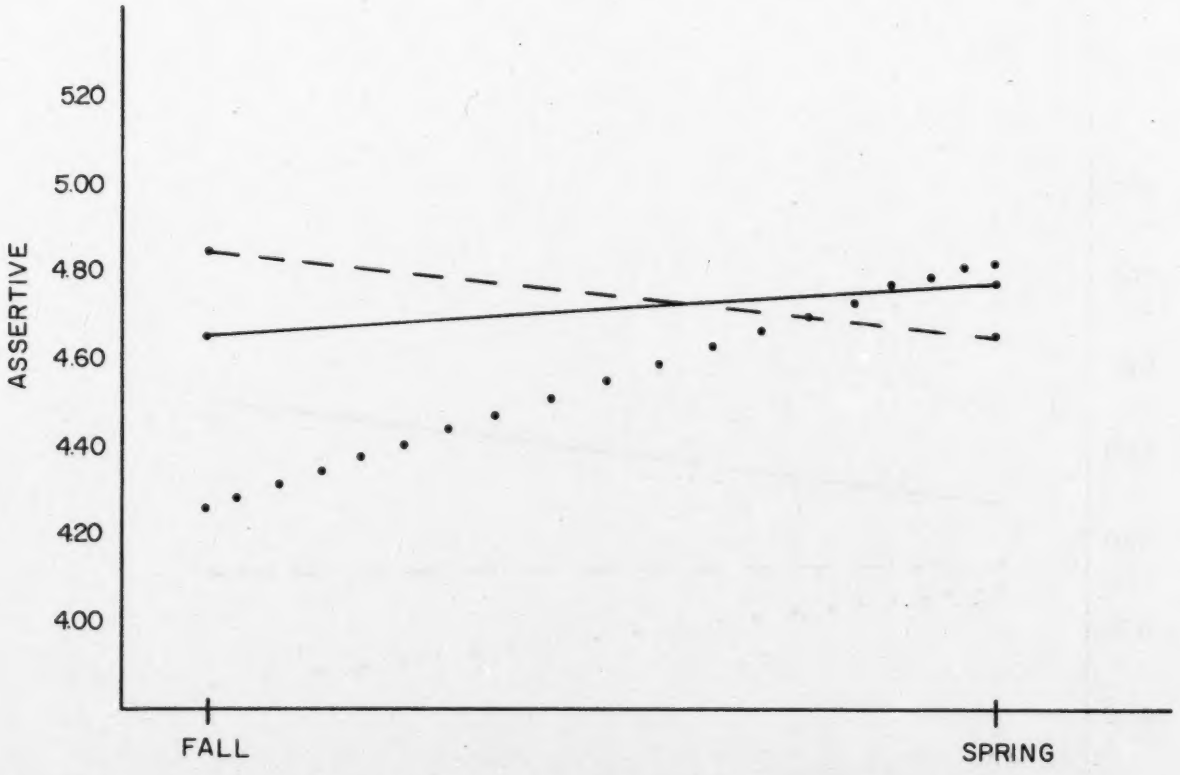
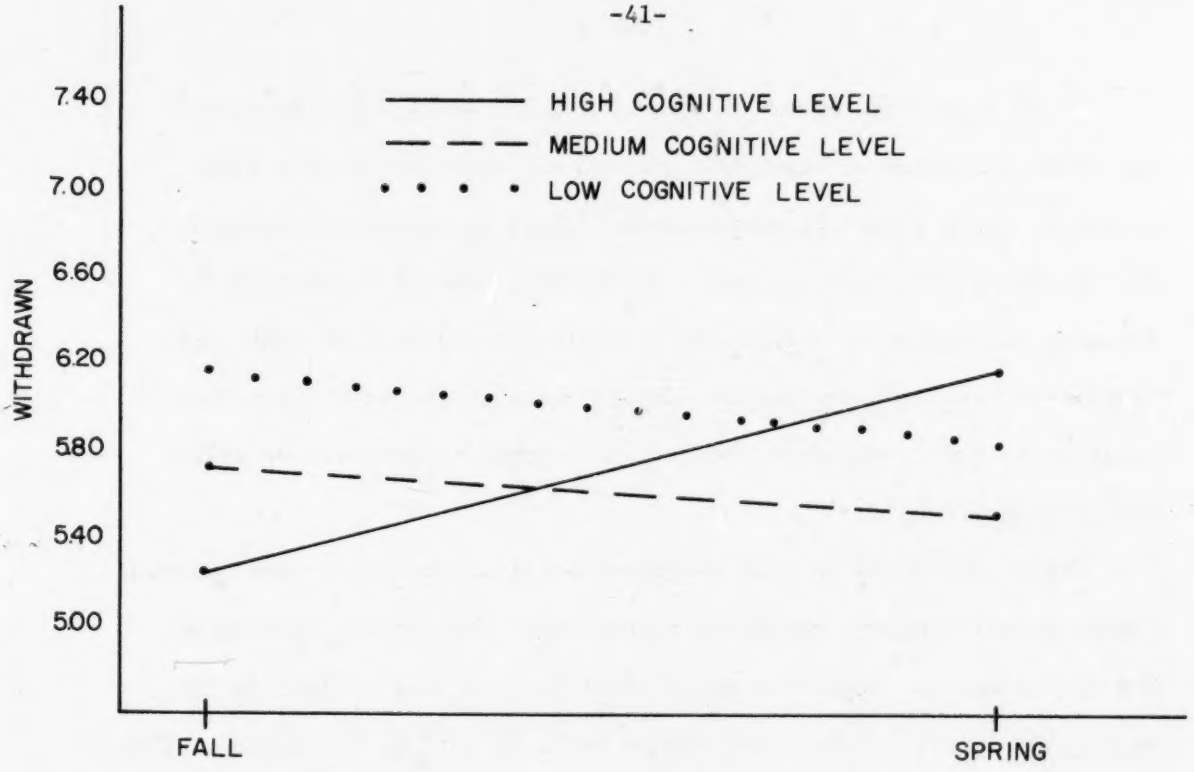


Fig. 6 Preschool Inventory Level X Period Effects for Moderate Responders.



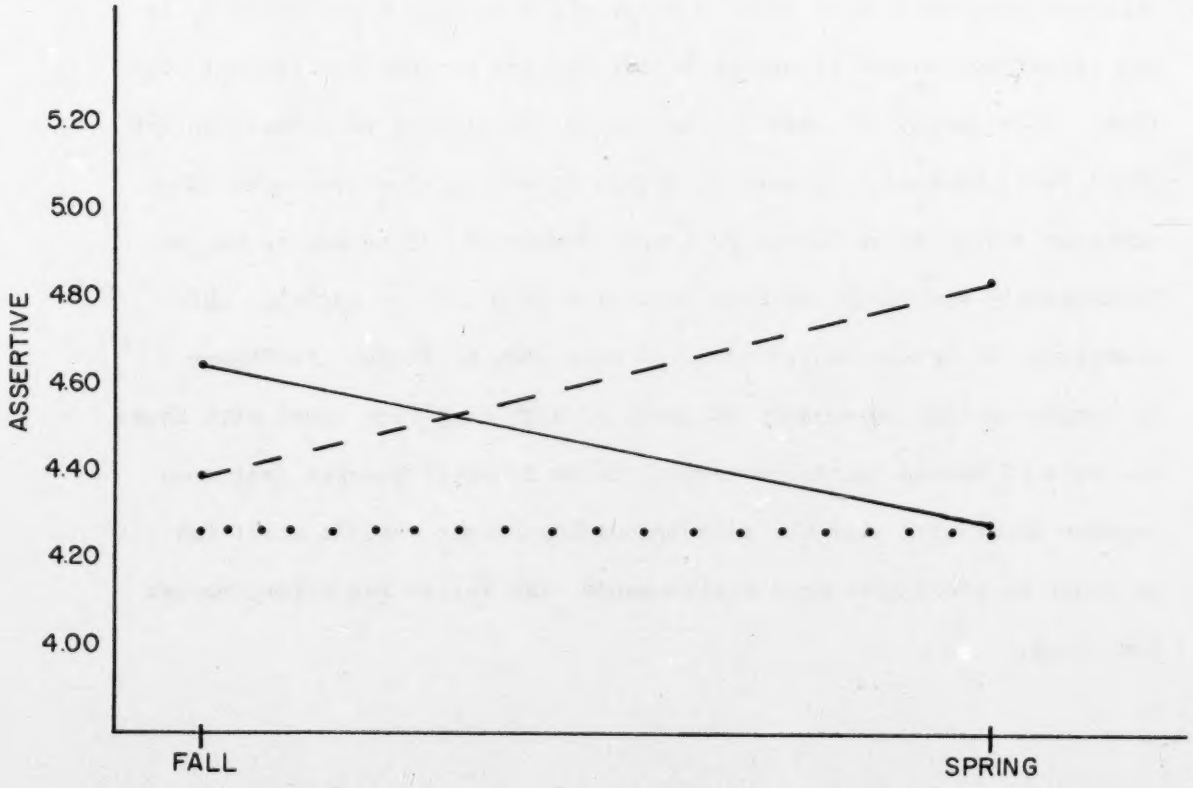


Fig. 7 Preschool Inventory Level X Period Effects for Slow Responders.

It is clear from Figure 5 that if a child was a fast responder, the known influence of cognitive skill level upon the child's adaptation to these preschool environments (Table 5) became increasingly strong during the preschool year. This developmental pattern of increasing divergence as a function of skill level indicates that fast responders who also were bright adapted increasingly well over time relative to fast responders who did not process information so effectively (impulsives).

Figure 6 reveals an interesting reversal of the above developmental trends in children who responded to the Sigel Task at moderate rates. For this subgroup, cognitive skill level had its usual effect in the fall only; initial differences tended to "wash out" by the spring. Thus, irrespective of their initial levels of cognitive skill, moderate tempo children apparently were able to delay their responses sufficiently in the classroom context to become better adapted to that environment over time. This conclusion does not extend to the slowest responders on the Sigel Task, however. As seen in Figure 7, when a slow responder also achieved a high score on the Preschool Inventory, he tended to become increasingly Withdrawn and less Assertive from fall to spring. This divergence in developmental trend is seen most strikingly in Figure 7 by comparing slow responders who were of High Cognitive Level with those who were of Medium Cognitive Level. These findings suggest that some process interfered with the slow-responding bright child's abilities to adapt to these preschool environments with increasing effectiveness over time.

Discussion

The present findings are among very few that have linked a test latency measure to personal-social behaviors in non-test contexts. In general these relationships appear to be consistent with concepts of response tempo and style discussed in the literature (Kagan, 1971; Kagan & Kogan, 1970; Repucci, 1970; Ward, 1973; Welch, 1973). Consider the quickest responders to the Sigel task in this study. These children tended to differ from the slower responding subgroups on all three dimensions which defined the personal-social configuration, and did so in ways indicating considerable difficulty in adapting to their preschool environments. Independent of their scores on the Preschool Inventory, these quick-responding children tended to be relatively aggressive, unaffectionate, less involved in peer relationships, and less likely to engage in cognitive or fantasy activities. On the positive side, these children did increase in Autonomous Achievement during the preschool year, and children who were bright as well as quick did not exhibit a tendency to withdraw increasingly during the preschool year, as did children who were less bright and quick (impulsives). In general, however, quick responders exhibited a pattern of personal-social behavior indicative of difficulty in coping with complex social interchanges, vulnerability to frustration, an aggressive posture in response to frustration or threat, and a tendency to disengage from interpersonal relationships.

In view of these particular classroom personal-social characteristics, it is not surprising that preschool teachers judged quick responders to

tasks involving response uncertainty as relatively difficult to teach (Emmerich, 1973b). Of course, present findings are based upon children pooled across a variety of preschool environments. Further studies are needed to determine whether variations among classroom environments, including individual differences in teacher classroom behaviors, influenced either the strength or patterning of personal-social behaviors in rapid responders.

Relative to the Fast subgroup, Medium and Slow responders on the Sigel task exhibited more positive affect, less aggressiveness, and more cognitive activity. In general, then, it would appear that a non-quick response to a task involving response uncertainty was conducive to adaptation in these preschool environments. The importance of response delay in the service of information processing within the classroom is seen rather dramatically in the Medium subgroup which exhibited relatively moderate (but not slow) response times on the Sigel task. In this subgroup, the usual relationship between cognitive skill level and social involvement became attenuated as the child accumulated classroom experience, as if these children were capable, in time, of "taking in" enough information to adapt with increasing effectiveness. Apparently, a moderate response tempo can compensate for a relatively low level of cognitive skill, at least with regard to the child's assertiveness within the classroom. Perhaps future analyses will reveal that a moderate response tempo in this population at this age also functions as a catalyst for cognitive growth in those children whose initial cognitive standing is relatively low.

In the study of teacher judgments, slowest tempo subgroups were perceived by teachers as generally more difficult to teach than were moderate tempo subgroups (Emmerich, 1973b). It was speculated that children who responded most slowly in response to test tasks involving response uncertainty might also be excessively cautious in their classroom personal-social relationships, perhaps due to fear of failure or to anxiety about the evaluation of others (Kagan & Kogan, 1970; Messer, 1970). There were several ways that these states might be manifested in children's classroom behaviors. For example, the Slow subgroup might exhibit lack of personal-social spontaneity or excessive shyness. The findings did not support this hypothesis, however, since this subgroup appeared to be as emotionally expressive as the Medium subgroup, and were more positively so than the Fast subgroup (Table 8). Relative to slow responders who were less bright, slow responders who were most bright did become increasingly Withdrawn during the preschool year (Figure 7). However, this outcome is as plausibly explained by this subgroup's increasing readiness for a more challenging educational experience as by increasing fear-of-failure over time.

A second possibility was that Slow responders would be especially anxious about their relationships with adults in particular, since adults are likely to communicate performance standards and to reinforce the child's performances in accordance with such standards. There was only limited and indirect evidence for this hypothesis. Slow responders exhibited less Adult Orientation than moderate responders, but this difference was not significant. Also, the Slow subgroup was least interpersonally Cooperative

and the Medium group was highest on this construct, suggesting, but by no means demonstrating, that slow responders were especially wary of establishing relationships with adults which might elicit evaluations of the child's performances.

One reason for not abandoning this hypothesis is seen in certain findings from the earlier study of teacher judgments (Emmerich, 1973b). In that study, some teachers did not believe in the efficacy of varying their teaching techniques for different children in their classroom (individuation). Also some teachers believed that children should be given autonomy within the classroom, accompanied by minimal amounts of positive or negative evaluative feedback. One possible consequence of both a non-individuating and an autonomy-granting teaching orientation is minimal emphasis upon evaluating the child's cognitive performances. In fact, child cohorts having relatively slow response latencies on the Sigel task prior to preschool entry also had teachers who believed either in a non-individuating or an autonomy-granting style of teaching (Emmerich, 1973b). Moreover, toward the end of the preschool year when the Sigel task was again administered, these particular child cohorts no longer exhibited relatively long latencies on this task. It is therefore possible that these teachers were sensitive early in the year to evaluation anxieties in their pupils and that their non-evaluative responses to these children (through non-individuation or autonomy-granting) rather quickly led to a reduction of such anxiety in these children. If this were the case, then the present personal-social ratings would not necessarily detect such a state in these children's relationships with adults in the classroom.

A third possible implication is that evaluation anxiety impels the child to relate more frequently to peers, since at this young age peers are unlikely to apply standards of cognitive performance to one another and to evaluate one another in these terms. This hypothesis received support, as the Slow subgroup was clearly highest in Child Orientation. While it is probably an incomplete explanation, teachers may have judged slow responders to be especially difficult to teach because these children's involvements with peers made it difficult for the teacher to capture and sustain their attention.

Although the evaluation-anxiety interpretation still remains tentative, present findings support the conclusion from the earlier study (Emmerich, 1973b) that in this population at this age a relatively moderate rate of response to uncertainty carries a different meaning than a slower response rate under this circumstance. While the Medium and Slow Sigel latency subgroups both exhibited the potential for a reflective response to cognitive challenges, the two studies indicate that an additional and as yet incompletely understood process was involved in the case of the slowest responders.

Summary and Conclusions

This study's purpose was to broaden our understanding of processes underlying preschool personal-social behaviors in economically disadvantaged children. An earlier report had established that the child's sex and age influence these classroom behaviors; the present report examined the influences of socioeconomic status, cognitive skill level prior to preschool entry, and response tempo and style measured by cognitive tests.

Major findings, discussed more extensively in the body of this report, can be summarized briefly as follows. When indexed by maternal education, variations in socioeconomic status within the present population generally were unrelated to classroom personal-social behaviors. Cognitive skill levels consistently influenced personal-social behaviors located along a Sociable vs. Withdrawn dimension, with more cognitively skilled children tending to be more socially outgoing. Children least advanced in verbal knowledge also were least likely to engage in cognitive activities in the classroom. These findings on the influences of cognitive skill level upon personal-social behaviors were consistent with comparable studies in the research literature.

Irrespective of level of cognitive skill, children who responded quickly to a cognitive task involving response uncertainty (fast response tempo) also exhibited considerable difficulty adapting to these preschool environments. Such difficulty was manifested by relatively low levels of positive affect and peer interaction, vulnerability to frustration, aggressiveness, and relatively little cognitive activity. Children with moderate or slow response tempos generally adapted better to these preschool environments in all of these respects, but moderate and slow responders also differed from each other. The most clearcut differences between these two subgroups were that slowest responders were more peer-oriented and less interpersonally cooperative. These and other differences suggested that a slow cognitive tempo is linked to a social-motivational factor as well as to a rational problem-solving strategy. The hypothesis that this factor would be fear-of-failure or evaluation anxiety received only partial

support. Finally, there was evidence that the influence of cognitive skill upon personal-social behavior at this age in this population is complexly moderated both by the child's response tempo and amount of experience in these preschool environments, an outcome that linked emerging cognitive styles (Impulsivity-Reflectivity) to personal-social development.

All three of the major dimensions of the personal-social configuration were related to test measures taken prior to preschool entry, but measures of cognitive skill influenced different personal-social constructs than did a measure of response tempo. As noted above, cognitive skill levels related most consistently to extent of social outgoingness. Major influences of response tempo upon personal-social behaviors were quite independent of the child's cognitive level, as expected on the basis of previous findings from the Longitudinal Study, and these influences were greater on a second major personal-social dimension, that of Love vs. Hostility. Thus, cognitive skill levels and response tempo were found at this age in this population to be largely related to orthogonal areas of personal-social functioning, the former influencing the child's general involvement with social relationships, and the latter determining whether the child's affective experiences within social relationships were predominantly positive or negative. When cognitive level did interact with response tempo to influence personal-social development, the critical dimension for such personal-social change appeared to be that of Sociable vs. Withdrawal. For example, children who were both least bright and the quickest responders (impulsives) tended to withdraw increasingly during

the preschool year, as did children who were both most bright and the slowest responders, although presumably for different reasons.

An interesting pattern of outcomes occurred for Autonomous Achievement, a prominent task-oriented construct. Children classified as relatively low with regard either to (a) socioeconomic status, (b) verbal knowledge, or (c) response latency (quick tempo) tended to increase in Autonomous Achievement during the preschool year, whereas children classified as moderate or high on these variables tended to decrease in this behavior during the preschool year. These results paralleled earlier findings in which younger children increased and older children decreased in this behavior during the year. The common element in all of these findings appears to be that of developmental maturity in information-processing skills or strategy. The more cognitively mature child apparently decreased in Autonomous Achievement with increasing classroom experience at this age, whereas the less cognitively mature child apparently increased in this behavior during this period. It remains unclear, however, whether some factor in these preschool environments tended to depress this behavior in more cognitively advanced children and to accelerate it in children of less cognitive maturity, or whether this developmental divergence at this age simply represents a difference in rate of attainment of a common developmental milestone. Perhaps future studies in this series will clarify this issue. In any event, the consistency of this finding attests once again to the importance of the child's cognitive status prior to preschool entry as an influence upon his subsequent personal-social development within the classroom setting.

There was little evidence that such family background variables as maternal education and the child's cooperation with the mother in task situations relate directly to the child's classroom personal-social behaviors. There was evidence, however, that family background influences rate of cognitive growth, which, in turn, influences the child's classroom personal-social behaviors. Apparently, children's personal-social behaviors in contexts outside the family are more directly influenced at this age by the family's stimulation of the child's cognitive growth than by direct socialization of personal-social behaviors per se within the family context. For reasons discussed earlier, however, this conclusion is best viewed as a tentative working hypothesis for future research. Moreover, the implication that cognitive processes mediate personal-social behavior is not seen here as inconsistent with the reciprocal view that certain personal-social behaviors within a given context can facilitate cognitive growth, while others can retard it.

The present study is the second in a series designed to examine a broad range of antecedent and concurrent influences upon classroom personal-social behavior and development, interactions among these influences, and associations between classroom personal-social behaviors and subsequent cognitive growth. While the present findings provide some valuable first approximations of the determinants of personal-social behaviors in young disadvantaged children, future studies in this series are expected to sharpen and deepen many of the conclusions reported here.

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